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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/691,793

10/23/2003

Jeremy P. Meyers

C-3239

7158

7590

04/18/2006

M. P. Williams
210 Main Street
Manchester, CT 06040

EXAMINER

PARSONS, THOMAS H

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/691,793		MEYERS ET AL.	
	Examiner		Art Unit	
	Thomas H. Parsons		1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This is in response to the Amendment filed 23 February 2006.

(Previous) DETAILED ACTION

Drawings

1. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(5) because they include reference character(s) not mentioned in the description has been **withdrawn** in view of Applicants' Amendment.

Specification

2. The objections to the disclosure because of minor informalities have been withdrawn in view of Applicants' Amendment.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, and 5-7 **stand** rejected under 35 U.S.C. 102(b) as being anticipated by Kumata et al. (4,508,793) as further evidenced by Hahn (5,228,255).

Claim 1: Kumata et al. in Figures 1-6 disclose a fuel cell power plant comprising:

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a plurality of fuel cells (12) arranged contiguously in a stack (11), each of the fuel cells having dimensions in width and height which are substantially equal to the width and height dimensions of the other fuel cells in the stack (11), whereby the edges of the fuel cells (12) combine to form substantially planar surfaces (see Figures 4 and 5);

a plurality of cooler plates (15), each having cooler inlet channels and cooler outlet channels and cooler flow channels extending between said inlet channels and the outlet channels (col. 4: 49-52), the cooler plates (15) being disposed between at least some of the fuel cells (col. 3: 65-67), the cooler plates (15) having principal width and height dimensions substantially the same as those of the fuel cells (12)(see Figures 4 and 5), each cooler plate (15) having a protrusion (15') containing the cooler (air) inlet channels and a protrusion containing the cooler (air) outlet channels, the protrusions extending outwardly from one or more the edges of the cooler plates, thereby extending away from the one or more planar surfaces (col. 4: 21-25);

an elastomeric rubber sealant material (Viton 34) contacting the one or more planar surfaces, completely surrounding each of the protrusions and extending between each one of the protrusions and a protrusion adjacent to the one protrusion, the elastomeric sealant material extending on either side of all of the protrusions and extending around the plane sufficiently to form a sealing surface (col. 4: 41-48 and Figure 8); and

a manifold structure (17) contacting the sealant material (34) and defining coolant manifolds (18), the manifold structure defining between itself and the sealant material a (a) an (air) coolant inlet manifold (18a) in fluid communication with inlet channels or (b) an (air) coolant outlet manifold (18b) in fluid communication with the outlet manifold channels, and also defining between itself and the sealant material (c) a reactant gas (process air) inlet manifold

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(20a) or (d) a reactant gas (process air) outlet manifold (20b). See abstract, col. 2: 17-38, and col. 3: 50-col. 5: 44.

Hahn is cited to disclose that Viton is a known elastomer rubber sealing material.

Claim 3: Kumata et al. in Figures 1-6 disclose a fuel cell power plant comprising:

a plurality of fuel cells (12) arranged contiguously in a stack (11), each of the fuel cells having dimensions in width and height which are substantially equal to the width and height dimensions of the other fuel cells in the stack (11), whereby the edges of the fuel cells (12) combine to form substantially planar surfaces (see Figures 4 and 5);

a plurality of cooler plates (15), each having cooler inlet channels and cooler outlet channels and cooler flow channels extending between said inlet channels and the outlet channels (col. 4: 49-52), the cooler plates (15) being disposed between at least some of the fuel cells (col. 3: 65-67), the cooler plates (15) having principal width and height dimensions substantially the same as those of the fuel cells (12)(see Figures 4 and 5), each cooler plate (15) having a protrusion (15') containing the cooler (air) inlet channels and a protrusion containing the cooler (air) outlet channels, the protrusions extending outwardly from one or more the edges of the cooler plates, thereby extending away from one or more of the planar surfaces (col. 4: 21-25);

an elastomeric rubber sealant material (Viton 34) contacting the one or more planar surfaces, completely surrounding each of the protrusions and extending between each one of the protrusions and a protrusion adjacent to the one protrusion, the elastomeric sealant material extending on either side of all of the protrusions and extending around the plane sufficiently to form a sealing surface (col. 4: 41-48 and Figure 8); and

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a manifold structure (17) contacting the sealant material (34) and defining coolant manifolds (18), the manifold structure defining between itself and the sealant material a (a) an (air) coolant inlet manifold (18a) in fluid communication with inlet channels or (b) an (air) coolant outlet manifold (18b) in fluid communication with the outlet manifold channels. See abstract, col. 2: 17-38, and col. 3: 50-col. 5: 44.

Hahn is cited to disclose that Viton is a known elastomeric rubber sealing material.

Claim 5: Kumata et al. disclose a manifold structure (17) also defining between itself and the sealant material a reactant gas inlet (20a) or outlet (20b) manifold. See abstract, col. 2: 17-38, and col. 3: 50-col. 5: 44.

Claim 6: Kumata et al. in Figures 3 and 4 disclose that the protrusions (projections 15') of each of the cooler plates (15) containing the coolant inlet channels are disposed on an edge of each cooler plate which is opposite to an edge of each cooler plate from which the protrusion containing the outlet channels extend.

Claim 7: Kumata et al. in Figures 2-7 disclose a fuel cell stack (11);

a sealant surface (34 in Figure 9, 37 in Figures 10-11, and 41 in Figures 12-13) on the fuel cell stack;

a manifold structure (17) secured to the sealant surface and forming with the sealant surface either (a) an (air) coolant inlet manifold (18a) or (b) an (air) coolant outlet manifold (18b), and also forming with the sealant material (c) a reactant gas (process air) inlet manifold (20a) or (d) a reactant gas (process air) outlet manifold (20b). See abstract, col. 2: 17-38, and col. 3: 50-col. 5: 44.

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Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 4 **stand** rejected under 35 U.S.C. 103(a) as being unpatentable over Kumata et al. as applied to claim 1 above, and further in view of Hahn (5,228,255).

Kumata et al. are as applied, argued, and disclosed above, and incorporated herein.

Kumata et al. do not disclose that the elastomeric sealant material is a silicon rubber.

Hahn discloses that the elastomeric sealant material is Viton and a silicon rubber (col. 2: 62-col. 3: 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the sealant material of Kumata et al. with the silicon rubber of Hahn because Hahn teaches an elastomeric sealant material that would have created a tight seal between bonded surfaces thereby improving the overall integrity and performance of the fuel cell system.

7. The rejection of claims 1, 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Kumata et al. in view of Breault et al. (6,461,753) as further evidenced by Hahn have been **withdrawn** in view of Applicants' Amendment.

Response to Arguments

8. Applicant's arguments filed 23 February 2006 have been fully considered but they are not persuasive.

Applicants argue that "...the only relevant embodiment of Kumata is disclosed in Figs. 10-13. Very importantly, the sealant material (37 in Fig. 11; 41 in Fig. 13) is not on the fuel cell stack, but rather is outboard of a frame 35 (Fig. 10, Fig. 12). Claims 1 and 3 have been amended to refer to an elastomeric sealant material contacting said one or more planar surfaces..-". The invention of providing the sealant directly on the planar surfaces formed by the cells and the cooler plates (as shown in Figure 2 and 3) eliminates the frame 35 illustrated in Figs. 10 and 12, but still..."

In response, the claim does not require providing a sealant *directly* on the planar surfaces formed by cells and the cooler plates. Further, the transitional phrase, "comprising" has been construed as open-ended language that does not preclude providing a sealant on the planar surface via a frame.

Applicants argue that "... There is no way that the elastomeric material of Figs. 10-13 can be moved into contact with the edges of the fuel cells with the pipes 45 in the way. Thus, the invention is a clear improvement over the non-piped embodiment of Kumata, and Kumata does not suggest any modification of the piped embodiment since such a modification would alter the preferred operation suggested by Kumata.

In response, Kumata et al. discloses several preferred embodiments of an air cooled system. One preferred embodiment is that of a non-piped embodiment as related to Figures 10-

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13 comprising a sealant completely surrounding each of the protrusions and extending between each one of the protrusions and in contact with the planar surfaces via a frame. Another preferred embodiment is that of a piped embodiment which appears to be a further modification of the non-piped embodiment as indicated by the disclosure of Kumata at el. on col. 6: 58-60 which recites, "Referring now to FIGS. 14 and 15, there is shown another embodiment of the present invention. The fuel cell system *further comprises* air pipes 45..." Accordingly, both embodiments comprise a sealant completely surrounding each of the protrusions and extending between each one of the protrusions and in contact with the planar surfaces via a frame.

Further, the Examiner is not sure what is meant by the Applicants' statement that "Kumata does not suggest any modification of the piped embodiment since such a modification would alter the preferred operation suggested by Kumata."

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

Thomas H Parsons
Examiner
Art Unit 1745
